

CHAPTER IX TREE PRESERVATION STANDARDS

ARTICLE I. GENERAL INFORMATION

9.100 Findings

The Mayor and City Council of the City of Woodstock hereby finds that the protection and preservation of trees, the planting of new trees and other landscape material as part of the land development process is a public purpose and provides for the public health and general welfare. This Ordinance is intended to further the City's policy that all development sites where trees are most commonly removed will achieve upon project completion, a uniform standard related to tree coverage, landscaping and buffers.

A healthy urban forest will increase the fiscal and psychological value of property, reduce the urban heat island effect and contribute to the community's aesthetic quality. These benefits are crucial to the long-term health and welfare of Woodstock's citizens, workers, and visitors.

9.101 Purpose

The purpose of this Ordinance is to firmly establish the value of trees to the community and to promote the health, safety, and general welfare of the public. Trees facilitate a harmonious community; provide a more attractive place to live; conserve natural resources; mitigate harmful vehicle emissions by reducing carbon dioxide levels; enhance aesthetic character of the community; and encourage appropriate use of land in the City of Woodstock. In addition, trees are recognized for their importance in shading and cooling, noise and wind reduction, prevention of soil erosion, production of oxygen, dust filtration and fostering improved air quality, providing wildlife habitat, and contributing to the economic value of real property. This Ordinance is also intended to help reduce the glare of motor vehicle lights, and enhance the appearance of open automobile parking areas and lands used for commercial, public/institutional, office, industrial, and residential purposes.

9.102 Applicability

The regulations included in this Ordinance shall apply to all properties located within the City of Woodstock. The removal of five (5) or fewer PROTECTED TREES, other than SPECIMEN TREES, is allowed on any Residential Lot within a single calendar year. Exemptions will be allowed by City staff if the owner must remove trees in order to build a newly permitted structure, or to build an addition to or to make improvements to an existing structure, or to improve the health of other trees in the landscape. If SPECIMEN TREES are to be removed, refer to the standards set forth in Section 9.302.

Land use designations shall be assigned according to categories defined in the Woodstock Zoning Ordinance. Any new construction, renovation, or alteration of a building that results in an expansion or alteration of the total square footage of the building footprint shall invoke the requirements contained in the Tree Ordinance. The Tree Ordinance shall be enforced by the City, designated agent, and/or the Municipal Court of the City of Woodstock.

9.103 Definitions

All words in these standards have their customary dictionary definition except as specifically defined herein. The words "shall" and "must" are mandatory, and the words "may" and "should" are permissive.

BASAL AREA: A forestry industry standard used to describe the cross-sectional area of a tree trunk at four and one-half feet above the ground.

BERM: A mound of soil, either natural or man-made, used to screen one site or property from the view of another.

BUFFER: A landscaped area around the perimeter of a parcel provided to soften the view of two adjacent lots or parcels from one another.

BUILDABLE AREA: Portion of a parcel excluding the required yards, easements, planting areas, environmental buffers (streams, wetlands) and areas within the future right-of-way.

CALIPER (or CAL.): American Association of Nurseryman standard for trunk measurement of nursery stock. CALIPER of the trunk shall be taken 6 inches above the ground for up to and including 4 inch CALIPER size, and 12 inches above the ground for larger sizes.

CANOPY TREE: Any self-supporting woody plant of a species that grows to an overall height of at least forty (40) feet, usually with one (1) stem or trunk and many branches.

CRITICAL ROOT ZONE (CRZ): The minimum area beneath a tree which must be left undisturbed in order to preserve a sufficient root mass to give a tree a reasonable chance for survival. The CRZ of any given tree shall be represented by a concentric circle with a radius equal to 12 times the diameter of the tree trunk.

DECIDUOUS TREE: A tree which sheds leaves annually.

DENSITY FACTOR: A unit of measure used to prescribe the calculated tree coverage on a site.

DBH: The diameter of a tree measured at a point four and one-half (4 ½) feet above grade.

EQUIVALENT REPLACEMENT: A tree of the same species that matches or exceeds the size, height, and spread of a removed tree.

EVERGREEN TREE: Any self-supporting woody plant of a species that grows to an overall height of at least thirty (30) feet, usually with one (1) stem or trunk and many branches, and having foliage that remains green and functional through more than one (1) growing season.

EXISTING DENSITY FACTOR (EDF): The TREE DENSITY UNITS awarded for the preservation of existing trees (100-year floodplain, wetlands and stream buffers excluded) which will remain on site to be protected during construction.

FLOWERING TREE: Any self-supporting woody plant of a species that grows to an overall height of less than forty (40) feet, usually with one (1) stem or trunk, many branches and flowers.

GENUS CAP: A term used to describe a limit determined by this Ordinance in which the quantity of a particular genus cannot exceed 30% of the total number of REPLACEMENT TREES on a site. This limit is put in place to prevent the creation of a MONOCULTURE.

GROUND COVER: Plant material that normally reaches a maximum height of eighteen (18) inches.

HARDWOOD TREE: An Angiosperm (deciduous) tree as distinguished from a Gymnosperm (coniferous) tree.

LANDSCAPING: Any combination of living plants (e.g. trees, shrubs, vines), natural features (e.g. rock, stone), and structural features (e.g. fountains, reflecting pools, outdoor artwork).

LAND DISTURBANCE PERMIT (LDP): A permit necessary to begin land-disturbing activity.

LANDSCAPE PLAN: A scaled plan that clearly delineates buildings, vehicular use areas, and displays and describes all LANDSCAPING.

LOT: A measured parcel of land having fixed boundaries and designated on a plot or survey.

MONOCULTURE: A plant culture (i.e. vegetation) that results from growing only one type of plant which creates the opposite condition of biodiversity and can sometimes be responsible for the spread of plant diseases.

OPAQUE BUFFER: A landscaped area planted in such a manner as to be impenetrable to view, or so obscuring to view that features, buildings, structures and uses become visually indistinguishable.

OPEN SPACE: Unoccupied portion of a lot or building site that is open to the sky and may contain , outdoor structures, or recreational facilities.

PARKING LOT TREES: Trees required pursuant to Section 9.2 herein.

PARKING BAY: A set of contiguous parking spaces plus adjacent and interior planting islands and peninsulas.

PERVIOUS AREA: Area of a parcel or lot left over after IMPERVIOUS AREAS are subtracted.

PROTECTED TREE: Tree of nine (9) inches or greater DBH, unless otherwise stated in this Ordinance.

REPLACEMENT DENSITY FACTOR (RDF): The minimum number of tree density units which must be achieved on a site after calculating the tree density units for existing trees (EDF) which will remain on site to be protected during construction.

REPLACEMENT TREE: A new tree planted on a site outside of a TREE PROTECTION AREA (i.e. RDF) and used to meet minimum SITE DENSITY FACTOR.

RESIDENTIAL LOT: A LOT shown on a subdivision plat as recorded in the records of Cherokee County.

SCREENING: Solid fencing, walls, BERMS, or dense vegetation used to conceal a LOT or part thereof from view.

SIDEWALK LANDSCAPE ZONE: The portion of a sidewalk area adjacent to the street curb and reserved for the placement of trees, groundcover, and street furniture including utility poles, waste receptacles, fire hydrants, traffic signs, traffic control boxes, tree grates, newspaper boxes, bus shelters, bicycle racks and similar elements in a manner that does not obstruct pedestrian access or motorist visibility.

SITE DENSITY FACTOR (SDF): The minimum number of tree density units per acre which must be achieved on a site after development.

SOFTWOOD TREE: A gymnosperm (coniferous) tree (as a fir or pine) as distinguished from an angiosperm (deciduous) tree.

SPECIMEN TREE: Any tree as defined by Section 9.302.

STREET TREE: Any self-supporting woody perennial plant, usually having a main stem or trunk and many branches which are a minimum size of three and one-half inches (3.5") caliper measured twelve (12) inches above ground and shall have a mature height of at least forty (40) feet.

TREE: Any living, self-supporting woody or fibrous plant which normally obtains a diameter breast height (DBH) of at least three (3) inches and typically has one (1) main stem or trunk and many branches.

TREE DENSITY UNIT: A credit assigned to a tree, based on the diameter of the tree, in accordance with the tables contained in this Ordinance. The term "unit" is not synonymous with "tree", and one unit is equivalent to one square foot of BASAL AREA (see BASAL AREA).

TREE PRESERVATION TRUST FUND: Fund established to pay for planting trees in public areas.

TREE PROTECTION AREA: Portion of a LOT to remain undisturbed by construction activities.

TREE PROTECTION FENCING: A barrier installed at and around the perimeter of a TREE PROTECTION AREA to prevent intrusion of construction-related activities in which fencing is a minimum of four (4) feet in height and is at the CRZ.

UNDERSTORY TREE: A tree that, under normal forest conditions, may grow to maturity beneath overstory/CANOPY TREES and will generally reach a mature height of at least 10 feet but less than 40 feet.

ARTICLE II. REQUIREMENTS

9.200 General Plan Requirements

1. An appropriately scaled Tree Protection Plan and/or Tree Replacement Plan shall be submitted and approved as part of the pre-development site plans as required by the provisions of this Ordinance.
2. All commercial parcels and Residential Lots under development shall comply with Street Tree and Parking Lot Tree requirements. Street Tree requirements are subject to the Zoning categories identified within the City of Woodstock Zoning Ordinance (See Chapter 7).
 - (a) The SIDEWALK LANDSCAPE ZONE shall be designed so that required Street Trees are planted in a suitable soil volume. Planting environment shall provide an average soil depth greater than or equal to 3 feet. Each Street Tree shall have a minimum area suitable for root growth of 160 square feet provided, however if this minimum square footage is not provided, subsurface soil cells shall be incorporated into the Tree Replacement Plan (includes trees in grates). All applicable details to show an industry standard subsurface soil cell design shall be attached as part of the Tree Replacement Plan.
 - (b) Parking Lot Trees shall be provided in landscape islands in parking areas equal to, or in excess of 1,500 sf. Parking areas under 1,500 sf. and multi level parking decks are exempt. There shall be one (1) Canopy Tree with a minimum Caliper of three inches (3") in a peninsula, island or median for each 1,140 square feet of Parking Bay area.
 - (c) Trees must be spaced such that no parking space is more than 50 feet from one of the parking bay trees. (Show a 50' radius circle for each Parking Lot Tree on Tree Replacement Plan to verify graphically (see Appendix F)). Trees planted along the perimeter shall not be considered Parking Lot Trees. Landscaped islands shall terminate each row of parking and all landscaped islands planted with trees shall be a minimum of 9' wide and 18' long (see Appendix F).
 - (d) The Tree Replacement Plan shall be designed so that all Parking Lot Trees are planted in a suitable soil volume. Planting environment shall provide an average soil depth greater than or equal to 3 feet. Each Parking Lot Tree shall have a minimum area suitable for root growth of 160 square feet provided, however if this minimum square footage is not provided, subsurface soil cells shall be incorporated into the Tree Replacement Plan. All

applicable details to show an industry standard subsurface soil cell design shall be attached as part of the Tree Replacement Plan.

ARTICLE III. TREE REPLACEMENT AND PROTECTION

9.300 Density Requirements

The tree density required by this Ordinance may be achieved by counting existing trees to be preserved, planting new trees, or some combination of the two as represented by the formula:

$$\text{SDF} = \text{EDF} + \text{RDF}$$

1. **SITE DENSITY FACTOR (SDF)**

SITE DENSITY FACTOR (SDF) is the minimum tree density required to be maintained. The SDF must be achieved whether or not a site had trees prior to development. The areas (in acres) of 100-year floodplain, wetlands, or mandatory stream buffers can be subtracted from the affected site acreage. The SDF is calculated by multiplying the number of acres of the Total Area of Developed Site by a minimum density unit requirement as follows:

TOTAL AREA OF DEVELOPED SITE	MINIMUM DENSITY UNITS (per acre)
< 1.0 acre	15 units
1.0 – 5.0 acres	20 units
> 5.0 acres	25 units

Ex: 1.20 acre site with no existing trees

$$\text{SDF} = \text{EDF} + \text{RDF}$$

$$\text{EDF} = 0$$

$$\text{SDF} = 1.20 \text{ Ac} \times 20 \text{ units / Ac} = 24.0 \text{ units}$$

$$24.0 \text{ units} = 0 (\text{EDF}) + 24.0 (\text{RDF})$$

2. **EXISTING DENSITY FACTOR (EDF)**

EXISTING DENSITY FACTOR (EDF) is the density of existing trees to be preserved on a site. Trees that exist in 100-year floodplain, wetlands or mandatory stream buffers cannot be counted toward meeting density requirements. EDF is calculated by converting the size of individual trees to density factor units (See Table 1).

Ex: 1.20 acre site with 9 existing trees

$$\text{SDF} = \text{EDF} + \text{RDF}$$

$$\text{SDF} = 1.20 \text{ Ac} \times 20 \text{ units / Ac} = 24.0 \text{ units}$$

$$\text{EDF} = \mathbf{12.9 \text{ units}}$$
 (see example chart below)

$$\text{SDF} - \text{EDF} = \text{RDF}$$

$$24.0 \text{ units} - 12.9 \text{ units} = 11.1 \text{ units needed to satisfy SDF}$$

EXAMPLE EDF CALCULATION				
DBH	Species	Number	Unit Value	Total Units
24"	Oak	2	2.8	5.6
18"	Poplar	3	1.9	5.7
10"	Pine	4	0.4	1.6
EDF =				12.9

3. **REPLACEMENT DENSITY FACTOR (RDF)**

REPLACEMENT DENSITY FACTOR (RDF) is the density of new trees to be planted on a site. RDF is calculated by subtracting the EDF from the SDF. The density factor credit for each size of REPLACEMENT TREE is shown on Table 2.

Ex: 1.20 acre site with 9 existing trees

$SDF = EDF + RDF$

$SDF = 1.20 \text{ Ac} \times 20 \text{ units / Ac} = 24.0 \text{ units}$

$EDF = 12.9 \text{ units}$

$SDF - EDF = RDF$

$24.0 \text{ units} - 12.9 \text{ units} = \mathbf{11.1 \text{ units RDF}}$ (see example chart below)

EDF 12.9 units + RDF 11.5 units = 24.2 units, > SDF

24.2 units, therefore SDF satisfied.

EXAMPLE RDF CALCULATION				
Number	Species	Size (cal.)	Unit Value	Total Units
8	Willow Oak	2"	0.5	4.0
8	Red Maple	2"	0.5	4.0
7	River Birch	2"	0.5	3.5
RDF =				11.5

9.301 Preservation of Existing Trees

An emphasis of this Ordinance is the preservation of as many existing trees as possible. Thus, planting credit will be given for preserving existing trees. Units shall be assigned according to values shown on Table 1. No credit will be allowed for shrubs.

1. All trees to be counted toward meeting site density requirements must be inventoried. Existing tree inventory information must be shown on the Tree Protection Plan.
2. Any Canopy Tree with a trunk diameter of 18 – 29 inches that is located on a lot on which construction activity is undertaken must have a surveyed location and must be shown on the Tree Protection Plan. These trees will receive double the normal unit value credit (see Table 1) if there is no disturbance within the CRZ.

Ex: 24" cal. Water Oak

Normal unit value = 2.8 units

Double credit = $2 \times 2.8 \text{ units} = 5.6 \text{ units}$

3. Specimen size HARDWOOD TREES (24 inches Cal at DBH and greater), SOFTWOOD TREES (30 inches Cal at DBH and greater), and FLOWERING TREES (12 inches Cal at DBH and greater) will receive triple the normal unit value credit (see Table 1). If claimed for extra credit units, SPECIMEN TREES must have surveyed locations. These trees must also be graphically represented on the tree protection plan by a circle corresponding to the size of the tree's CRITICAL ROOT ZONE (CRZ).

Ex: 38" cal. Water Oak

Normal unit value = 8.1 units

Triple credit = $3 \times 8.1 \text{ units} = 24.3 \text{ units}$

4. Under no circumstance will extra credit be allowed if there is disturbance in the CRZ, unless it is determined by a certified arborist that the disturbance did not greatly impact the health of the tree.

5. TREE PROTECTION FENCING is required to be placed at the CRZ for all trees to be saved and locations shall be clearly delineated on the Tree Protection Plan. All TREE PROTECTION FENCING shall be installed prior to and maintained throughout the land disturbing and construction process, and should not be removed until final landscaping is installed, inspected and final approval granted by the City (see also 9.302 Tree Protection).
6. Sampling methods (i.e. a plot-sample survey) may be used to determine tree densities for large forested areas with a minimum size of 5 acres or greater. A plot sample is defined as an area measuring 50 feet by 50 feet, for a minimum size of 2,500 square feet. Sampling areas must be located within the limits of a Tree Protection Area. The sample must be taken in a portion of the site that is representative of its cover-type. The Tree Protection Plan must delineate all GROUND COVER-types and provide a general description of the types of trees present within the Tree Protection Area (i.e. hardwoods, pine/hardwood mix, etc.). Sampling and/or inventory methods must be approved by the City.
7. No credit will be given for trees preserved in mandatory stream or wetland buffers as required by the Stream Buffer Protection Zone in Section 7.603. The area (measured in acres) of the undisturbed stream and wetland buffers shall be excluded from the total site acreage. Any trees saved or replaced in the impervious buffer will receive appropriate credits.
8. To aid preservation efforts, land owners shall have the option of moving existing trees to prevent their damage or destruction by development activities. To receive credit for transplanted trees, the following standards must be adhered to:
 - (a) Trees must be less than ten (10) inches caliper measured six (6) inches above grade;
 - (b) Trees must remain within the planting areas of the parcel;
 - (c) Trees shall not be moved to or from stream or wetlands buffers.
9. With regard to private property owners and/or Residential Lots not incidental to development, a tree removal permit is required for Specimen Tree removal. A permit will be granted if the Specimen Tree is clearly dead, dying, diseased with no chance for recovery or presenting eminent danger to life, limb or property. If City staff can not adequately assess the condition of the tree, then the property owner shall be required to provide a letter stating such from a certified arborist.
10. Tree Protection Areas for subdivisions should be located in common areas, or in buffers required to be undisturbed by zoning or other regulations, or within building setbacks. If Tree Protection Areas must be located on individual lots, the lots must be of sufficient size to reasonably expect the trees to be preserved at the completion of the building process.

- (a) On the Tree Protection Plan and on the final plat, provide a symbol on each lot where a Tree Protection Area is designated and show the following note corresponding to that symbol:



This lot has a designated Tree Protection Area, the dimensions of which are on file with the City of Woodstock. The homebuilder is responsible for maintaining this area in an undisturbed condition until the release of the certificate of occupancy. Protective fencing must be installed and maintained according to City of Woodstock standards.

- (b) On the Tree Replacement Plan, and on the final plat, provide a symbol on each lot where a tree planting is required and show the following note corresponding to that symbol:



This lot has a requirement to plant canopy trees (not flowering or pines). These trees must be planted when the house is near completion. The certificate of occupancy will not be released unless the trees are planted.

11. With regard to subdivision developments, the City shall require that improvements be located so as to result in minimal disturbance to the natural topography of the lots and the protection of a maximum number of mature trees on the lot. Damage to mature trees located within setback and required yard areas be minimized as much as possible under the particular circumstances, as determined by City staff.
12. Every lot in a subdivision shall have trees, either preserved or planted for which an LDP is obtained after the adoption of this Ordinance. These trees can be counted as part of the required SDF for the development. If trees must be planted on any lot, these trees must be a minimum of two (2) inch caliper. This requirement shall apply to the developer or homebuilder, whoever is the responsible party at the issuance of the Certificate of Occupancy for the individual lot.

9.302 Preservation, Replacement & Removal of Specimen Trees

A SPECIMEN TREE is any tree which qualifies for special consideration for preservation due to its size, type and condition. The following criteria are used by the City to identify SPECIMEN TREES. Both the size and condition criteria must be met for a tree to qualify.

Size Criteria:

Hardwoods:	24 inch Cal at DBH or larger
Softwoods:	30 inch Cal at DBH or larger
Understory/Flowering trees:	12 inch Cal at DBH or larger

Condition Criteria:

Life expectancy greater than 15 years;
Relatively sound and solid trunk with no extensive decay;
No more than one major and several minor dead limbs (hardwoods only);
No major insect or pathological problem.

1. Small trees can be classified as specimen if of a rare or unusual species, of exceptional quality, or socio-historical significance. Small trees may also qualify as specimen if used in a landscape as a focal point of the design. In order to claim this credit, the applicant must submit a letter from a certified arborist stating that the tree(s) meet these qualifications.
2. A report for each Specimen Tree that is shown to be impacted by a proposed development requiring an LDP must be submitted to the City to determine whether that tree meets the condition criteria for specimen status. The report must be prepared and signed by a certified arborist or a registered forester. The report must contain the following information:
 - ☐ Site plan showing an accurate surveyed location of the tree,
 - ☐ Identification/verification of the tree's size and species,
 - ☐ Description of the surrounding site conditions,
 - ☐ Detailed description of the tree's condition,
 - ☐ Digital photographs to illustrate any defects which would disqualify the tree from specimen status.

The final determination of SPECIMEN TREE status will be made by City staff after reviewing the report.

- (a) If a SPECIMEN TREE is to be removed, a plan or written documentation indicating the reason for removal must be submitted to the City.
- (b) The removal of any SPECIMEN TREE impacted by a proposed development must be mitigated by replacing the removed SPECIMEN TREE with minimum four-inch Caliper trees of comparable species at a rate equal to the unit value of the tree removed. These

recompense trees are in addition to the minimum unit requirement (SDF) for a particular site.

- (c) Any person who removes a Specimen Tree in violation of this Ordinance shall be assessed a fine in accordance with Section 9.401. In regards to Specimen Trees removed after being designated for preservation on an approved plan, the removed tree must also be replaced on an inch-for-inch basis with tree species with potential for comparable size and quality, regardless of the unit per acre minimum requirement. If a tree is removed without approval and there is no evidence of its condition, size alone will be the determining factor for replacement. In regards to Specimen Trees removed on a Residential Lot, the fine shall be paid as referenced, however there shall be no requirement for replacement of the Specimen Tree.
3. In order to encourage the preservation of SPECIMEN TREES and the incorporation of these trees into the design of new development projects, two (2) incentives are offered:
- (a) Extra credit units (see Section 9.301, items 2 and 3);
 - (b) An administrative variance to the Land Development Ordinance or to the zoning requirements (i.e. setbacks and buffers) may be requested in writing to the Development Review Committee (DRC). If a reasonable design option has been considered, and presented to the DRC, which would preserve SPECIMEN TREES, and if not for conflicting with other regulations established in the City's code, the DRC may issue an administrative variance.

Administrative variances for the purpose of potential re-design of a development site to save SPECIMEN TREES will be reviewed on a case-by-case basis and shall be subject to the approval of the DRC. Under no circumstance will this incentive allow the requirements of the Tree Preservation Ordinance to be reduced administratively. Once approved, the administrative variance must be recorded and a copy of the recorded document must be shown on the Tree Protection Plan and/or the Tree Replacement Plan.

Table 1: EXISTING TREE CREDITS

CANOPY TREES:			PINE TREES:			FLOWERING TREES:		
SIZE CLASS	DIAMETER (DBH)	UNIT VALUE	SIZE CLASS	DIAMETER (DBH)	UNIT VALUE	SIZE CLASS	DIAMETER (DBH)	UNIT VALUE
1	2-4 inches	0.3	1	2-4 inches	0.1	1	2-4 inches	0.1
2	5-8 inches	0.4	2	5-8 inches	0.2	2	5-8 inches	0.2
3	9-12 inches	0.6	3	9-12 inches	0.4	3	9-11 inches	0.4
4	13-16 inches	1.2	4	13-16 inches	1.0	4	12-16 inches	1.0
5	17-20 inches	1.9	5	17-20 inches	1.9			
6	21-24 inches	2.8	6	21-24 inches	2.8			
7	25-29 inches	3.8	7	25-29 inches	3.8			
8	30-32 inches	5.1	8	30-32 inches	5.1			
9	33-36 inches	6.5	9	33-36 inches	6.5			
10	37-40+ inches	8.1	10	37-40+ inches	8.1			

Note:

The unit value of any individual tree may be determined by using the formula:

$$(\text{DBH})^2 \times .7854 / 144$$

Ex: 44" cal. at DBH oak tree

$$44^2 \times .7854 / 144$$

$$= 1,936 \times .7854 = 1,520.53 / 144$$

$$= 10.56 \text{ units}$$

9.303 Tree Protection Standards

Allowing enough space for a tree's root system is the most critical factor in tree protection throughout the development process. The root system within the dripline region is generally considered to be the CRITICAL ROOT ZONE (CRZ). Disturbance within this zone can directly affect a tree's chances for survival. In order to protect trees, the following standards should apply:

1. The CRZ for each tree or group of trees shall include at minimum the total area beneath the tree canopy (furthest extent of the dripline) and shall be represented on the plan by a circle the size of the CRZ (see definition CRZ).
2. Site layout should be designed to accommodate TREE PROTECTION AREAS;
3. Construction activities should be arranged to prevent encroachment into TREE PROTECTIONS AREAS;
4. No disturbance whatsoever shall occur within TREE PROTECTION AREAS without prior written approval by the City. Disturbance permitted with approval from the City shall be limited to general

maintenance (i.e.: removal of dead trees, cleaning of underbrush) and shall not be allowed to use machinery within the TREE PROTECTION AREA.

5. Active protective tree fencing shall be installed along the outer edge of and completely surrounding the CRZs of all Specimen Trees or stands of trees prior to land disturbance;
6. TREE PROTECTION FENCING shall be minimum four (4) feet high and made of orange laminated plastic netting with wooden posts and rail fencing or other equivalent material as approved by the City.
7. In situations where TREE PROTECTION FENCING may not be required, and where tree trunks are in jeopardy of being damaged by equipment, 2x4 inch boards may be requested to be strapped around the trunks of the trees;
8. All protection zones should include signage in English and Spanish that identifies the areas as tree protection and preservation zones and include the name and phone number of the developer or designated agent;
9. All tree save fencing must be installed prior to any clearing, grubbing, or grading and must be maintained in functioning condition throughout all phases of development and construction;
10. Once TREE PROTECTION AREAS are established and approved, any changes are subject to review and approval by the City;
11. Tree planting may be delayed up to six (6) months in the case of unfavorable climate conditions (drought, flood, extreme heat or cold). Property owners must provide the City with a performance bond or cash escrow that identifies a target date for when the required numbers, sizes, and species of trees will be planted to meet the requirements of this Ordinance.

9.304 Tree Replacement Standards

1. The replacement of trees shall occur within the required yards, buffers, OPEN SPACE, parking lots, and landscape areas, as specified in the Performance Zoning Standards and Tree Preservation Ordinances. The following standards for replacement will be used to evaluate proposed tree planting plans:
 - ☐ Existing tree coverage, size, and type;
 - ☐ Number of trees to be removed from the lot or parcel;
 - ☐ Area to be covered with structures, parking, and driveways;
 - ☐ Grading plan and drainage requirements;
 - ☐ Character of the site and its environs.
2. REPLACEMENT TREES shall be ecologically compatible with the intended growing site, contribute to the diversity of the urban forest, and add to the overall aesthetic quality of the City.
3. The spacing of REPLACEMENT TREES must be compatible with spatial site limitations with responsible consideration towards species sizes when mature. Minimum spacing for CANOPY TREES and STREET TREES is 30 feet on center, with no canopy tree or street tree being planted less than 20 feet on center from any other tree. Spacing of UNDERSTORY TREES and/or trees in parking lots shall be subject to approval of the City, according to accepted horticultural standards.
4. In the event that existing power lines prohibit the planting of CANOPY/STREET TREES, an appropriate UNDERSTORY TREE species may be selected and approved for credit according to accepted horticultural standards.

5. Trees selected for planting may be a species from the recommended tree species lists shown in the appendices. Use of a species not shown on these lists is subject to approval of the City, according to accepted horticultural standards.
6. REPLACEMENT TREES shall be a minimum two (2) inch Caliper measured six (6) inches above grade, and be protected by a twelve (12) month guaranteed bond beginning at the date of planting.
7. Planting of REPLACEMENT TREES within utility, storm drainage, or sanitary sewer easements is not acceptable, and no credit will be allowed toward the site density requirement. All REPLACEMENT TREES where roots could be impacted by infrastructure (utilities) shall be planted with an approved root guard to prevent conflict.
8. Trees and plants selected for planting must meet the minimum requirements as provided in the "American Standard for Nursery Stock" (ANSI Z60.1, 1980).
9. Each development site (parcel) should contain trees of sufficient number, size, and type to achieve the minimum required SITE DENSITY FACTOR (SDF), which is determined according to the size of the parcel and is intended to be consistent across uses and underlying zoning categories. Total replacement units should be gathered by using as diverse a palette of species of trees as possible. However, a minimum of seventy percent (70%) of the total replacement units required for any parcel must be achieved in the form of Canopy Trees.
10. When less than 10 trees are shown to be planted on a project, one species may be specified. When 10 to 50 trees are shown, a minimum of three (3) species of trees are required. When more than 50 trees are shown, a minimum of five (5) species of trees are required.
11. When 10 or more trees are to be planted, no single genus shall represent more than 30 percent of the RDF. This limit is also known as a "GENUS CAP".

Table 2: REPLACEMENT TREE CREDITS

CANOPY TREES:		PINE TREES:		FLOWERING TREES:	
CALIPER SIZE	UNIT VALUE	HEIGHT	UNIT VALUE	CALIPER SIZE	UNIT VALUE
2"	0.5	7-8'	0.5	2"	0.5
3"	0.6	10-12'	0.6	3"	0.6
4"	0.7	14-16'	0.7	4"	0.7
5"	0.9	18-20'	0.9	5"	0.9
6"	1.0				
7"	1.2				
8"	1.3				

Notes:

Tree diameter fractions may be rounded up if 0.5 inches or greater and rounded down if 0.4 inches or less.

Multi-trunk trees shall be given credit by measuring the single largest trunk.

Tree-form shrubs shall not be given credit.

12. Buffer Planting Standards are as follows:

An OPAQUE BUFFER is a designated area along a property line that is required to be planted for the purpose of SCREENING. Buffers may be required as a condition of zoning or in areas where incompatible land uses exist (i.e. commercial adjacent to residential).

The buffer shall consist of evergreen plant materials that must form an 80% visual barrier within 2 years and a 100% visual barrier within 5 years. Trees must be minimum 6-feet height at installation, and shrubs must be minimum 24-inch height at installation.

- ☐ **Existing buffer to remain undisturbed:** Sparsely vegetated or previously disturbed portions of this undisturbed, existing buffer must be replanted to comply with the definition above;
- ☐ **Buffer Width 20' or less:** This buffer shall consist of a minimum of one row of EVERGREEN TREES and one row of evergreen shrubs (See Appendix E Fig. 1);
- ☐ **Buffer Width 21-35':** This buffer shall consist of a minimum of two rows of EVERGREEN TREES and one row of evergreen shrubs (See Appendix E Fig.2);
- ☐ **Buffer Width +35':** This buffer shall be subject to approval by the City of Woodstock.

EVERGREEN TREES planted within buffers areas may be counted for credit toward the minimum Site Density Factor (Refer to Appendix C for species that are suitable for buffer plantings).

9.305 Acts of Nature

In the case of an act of nature, be it drought, flood, tornado, lightening, hurricane, wind, insects, snow, ice, rain, or hail, that destroys a tree after the twelve (12) month performance bond or cash escrow has expired, the owner(s) of an affected parcel are excused from replacing those trees as required by the procedure established by this Ordinance.

9.306 Tree Removal

Tree removal should be considered a secondary option for meeting the requirements of this Ordinance, and should be pursued only if all avenues to preservation have been exhausted. No permit shall be issued for the removal of any PROTECTED TREE unless one of the following criteria is met:

1. The tree is located in the BUILDABLE AREA or street right-of-way of a parcel or lot on which improvement is to be made and the tree unreasonably restricts the permitted use of the property;
2. The tree is diseased, injured beyond restoration, in danger of falling, or interferes with utility services.

9.307 Tree Species

A diversity of tree species facilitates the long-term health of the urban forest. Lists of tree species deemed acceptable by the City of Woodstock for use in meeting the requirements of this Ordinance are found in Appendices A, B, and C.

ARTICLE IV. IMPLEMENTATION, ENFORCEMENT AND PENALTIES

9.400 Public Trees

No person shall remove, destroy, break, cut, or deface any tree or shrub growing in any public right-of-way, easement, environmental buffer, or city park under any circumstances. No person shall directly or

indirectly place stone or cement or similar substances about any tree growing in the public right-of-way which impedes the entrance of water and air to the roots of the tree. No person shall attach or place any rope, wire, sign poster, handbill or any other thing on any tree or shrub growing in any public right-of-way or city park. In the case of erection, demolition, or repair of any structure, the developer/ owner shall place guards around all nearby trees in a public right-of-way to prevent harm or injury.

9.401 Tree Preservation Trust Fund

This Ordinance hereby establishes the Woodstock TREE PRESERVATION TRUST FUND. The Fund will be used exclusively to purchase, install, and maintain trees throughout the City's public areas, including parks, green spaces, right-of-way, and government building sites.

1. Occasionally a project site does not have the capacity or will not bear the required density of trees. If a property owner or developer cannot meet the minimum site density requirement for tree replacement and/or Specimen Tree recompense, a mitigation fee for each tree required by this Ordinance but not planted will be paid to the Tree Preservation Fund. A schedule of mitigation fees is presented below:

Size of Replacement Tree:	Mitigation Fee (per tree):
2 inch cal.	\$450.00
4 inch cal. (recompense)	\$700.00

2. A fine for each PROTECTED TREE or SPECIMEN TREE removed without a permit issued by the City will be paid to the tree preservation fund. A schedule of fines is presented below:

Size of Tree Removed:	Fine:
9 to 12 inches DBH	\$1,200.00
13 to 18 inches DBH	\$2,100.00
19 to 23 inches DBH	\$3,200.00
Specimen Tree (24 inch DBH)	\$5,300.00

DBH measurement shall be rounded up to the nearest whole number.

Money collected from mitigation fees and fines under this Ordinance shall be deposited into the TREE PRESERVATION TRUST FUND.

9.402 Easements

The City is hereby authorized to enter into agreements with the owners of private property located within the City for the purpose of acquiring easements to plant trees. Private property owners shall acquire ownership of trees after planting provided agreement to maintain the trees is reached and the City is absolved of any liability attributable to the planting or presence of the trees. No agreement may be longer than two (2) years and all shall limit the City's interest to an area sufficient to allow planting of trees.

9.403 Inspection

1. Every development within the City shall be required to undergo landscape inspection by the City's designated agent prior to the issuance of a certificate of occupancy. The inspection will determine whether the tree preservation or replacement plan has been implemented as required by this ordinance. At the time of inspection, the City shall collect an inspection fee. This fee will be determined by the Mayor and City Council and used to cover the cost of labor and materials for performing tree and/or landscape inspections.
2. Once completed, a written report will be prepared outlining the findings of the inspection and transmitted to the property owner or developer. If the inspection shows that tree planting has been

implemented according to plan, a certificate of occupancy will be issued. If the inspection reveals deficiencies between the approved tree protection and replacement plan and the condition of the development site, the property owner or developer will be notified of the nature and extent of the problems uncovered during inspection. Upon issuance of the report, all deficiencies must be corrected before a certificate of occupancy can be issued.

9.404 Violation and Penalty

It shall be unlawful for any person, firm, organization, or society to violate the provisions of this Ordinance. The removal or destruction of each tree shall constitute a separate offense. Violation of this Ordinance shall constitute grounds for revoking or suspending any permit granted for the construction, demolition, or renovation of a structure on the lot or parcel. Upon revocation or suspension of Permit, no new Permit for construction, demolition, or renovation of any structure on the site shall be issued for not less than one (1) month; and a civil penalty of five hundred dollars (\$500.00) shall be levied for violating the requirements of this Ordinance.

9.405 Appeals

In the event an applicant disputes the decision of the City regarding tree removal and/or replanting, applicant may file a written appeal with the Mayor and City Council. The written appeal should detail the reasons why the decision of the City staff should be vacated. Upon receiving the written appeal, the Mayor and City Council shall hear arguments and decide whether to uphold the administrative decision, modify the administrative decision, or negate the administrative decision. The decision of the Mayor and City Council shall be final. A written copy of the findings and decision of the Mayor and City Council shall be transmitted to the applicant and City.

9.406 Validity

Should any section of this provision of this Ordinance be declared by a court of competent jurisdiction to be invalid, such decision shall not affect the validity of the Ordinance in whole or any part thereof other than the part so declared invalid.

9.407 Repeal of Conflicting Provision

The provisions of any part of Resolutions in conflict herewith are repealed.

9.408 Effective Date

This Ordinance shall become effective upon approval by the Mayor and Council of the City of Woodstock on date of adoption of this Ordinance.

APPENDIX A: CANOPY TREES (40 to 100 feet in height at maturity)

BOTANICAL NAME	COMMON NAME	NATIVE TREE	DROUGHT TOLERANCE	OZONE REMOVER
<i>Acer rubrum cultivars</i>	Red Maple	x	x	x
<i>Acer saccharum cultivars</i>	Sugar Maple		x	x
<i>Betula nigra</i>	River Birch	x	x	x
<i>Carya species</i>	Hickory Species	x		x
<i>Celtis laevigata</i>	Sugar Hackberry	x		
<i>Cercidiphyllum japonicum</i>	Katsuratree			
<i>Fagus grandiflora</i>	American Beech	x		x
<i>Fraxinus pennsylvanica</i>	Green Ash		x	x
<i>Ginkgo biloba</i>	Ginkgo (male only)		x	x
<i>Gleditsia triacanthos</i>	Common Honeylocust	x		
<i>Liquidamber styraciflua</i>	American Sweetgum	x		
<i>Liriodendron tulipifera</i>	Tulip Poplar/Yellow Poplar	x		x
<i>Magnolia acuminata</i>	Cucumber Magnolia	x		
<i>Magnolia grandiflora</i>	Southern Magnolia	x		
<i>Metasequoia glyptostroboides</i>	Dawn Redwood			x
<i>Nyssa sylvatica</i>	Black Gum/Black Tupelo	x		
<i>Ostrya virginiana</i>	Hophornbeam/Ironwood	x		
<i>Oxydendrum arboreum</i>	Sourwood	x	x	
<i>Pistacia chinensis</i>	Chinese Pistache		x	x
<i>Platanus x acerifolia</i>	London Planetree		x	x
<i>Platanus occidentalis</i>	American Sycamore	x	x	
<i>Quercus acutissima</i>	Sawtooth Oak		x	
<i>Quercus alba</i>	White Oak	x		
<i>Quercus bicolor</i>	Swamp White Oak	x	x	
<i>Quercus coccinea</i>	Scarlet Oak	x	x	
<i>Quercus laurifolia</i>	Laurel Oak	x	x	
<i>Quercus lyrata</i>	Overcup Oak	x	x	
<i>Quercus nigra</i>	Water Oak	x		
<i>Quercus nuttalli</i>	Nuttall Oak	x	x	
<i>Quercus palustris</i>	Pin Oak	x		
<i>Quercus phellos</i>	Willow Oak	x	x	
<i>Quercus prinus</i>	Chestnut Oak	x	x	
<i>Quercus shumardii</i>	Shumard Oak	x	x	
<i>Taxodium distichum</i>	Baldcypress	x		
<i>Ulmus parvifolia</i>	Chinese Elm/Lacebark Elm		x	x
<i>Zelkova serrata</i>	Japanese Zelkova			x

APPENDIX B: PARKING LOT AND STREET TREES

BOTANICAL NAME	COMMON NAME	NATIVE TREE	DROUGHT TOLERANCE	OZONE REMOVER
<i>Acer barbatum</i>	Southern Sugar Maple	x		
<i>Acer buergeranum</i>	Trident Maple		x	
<i>Acer rubrum cultivars</i>	Red Maple	x	x	x
<i>Acer saccharum cultivars</i>	Sugar Maple		x	x
<i>Betula nigra</i>	River Birch	x	x	x
<i>Carya species</i>	Hickory Species	x		x
<i>Carpinus betulus 'Fastigiata'</i>	European Hornbeam			
<i>Fraxinus pennsylvanica</i>	Green Ash		x	x
<i>Ginkgo biloba</i>	Ginkgo (male only)		x	x
<i>Nyssa sylvatica</i>	Black Gum/Black Tupelo	x		
<i>Pistacia chinensis</i>	Chinese Pistache		x	x
<i>Platanus x acerifolia</i>	London Planetree		x	x
<i>Quercus acutissima</i>	Sawtooth Oak		x	
<i>Quercus coccinea</i>	Scarlet Oak	x	x	
<i>Quercus hemisphaerica 'Darlington'</i>	Darlington Oak		x	
<i>Quercus laurifolia</i>	Laurel Oak	x	x	
<i>Quercus lyrata</i>	Overcup Oak	x	x	
<i>Quercus nigra</i>	Water Oak	x		
<i>Quercus nuttalli</i>	Nuttall Oak	x	x	
<i>Quercus palustris</i>	Pin Oak	x		
<i>Quercus phellos</i>	Willow Oak	x	x	
<i>Quercus prinus</i>	Chestnut Oak	x	x	
<i>Quercus shumardii</i>	Shumard Oak	x	x	
<i>Tilia cordata</i>	Littleleaf Linden		x	x
<i>Taxodium distichum</i>	Baldcypress	x		
<i>Ulmus alata</i>	Winged Elm	x	x	
<i>Ulmus parvifolia</i>	Chinese Elm/Lacebark Elm		x	x
<i>Zelkova serrata</i>	Japanese Zelkova			x

APPENDIX C: UNDERSTORY TREES (10 to 40 feet in height at maturity)

BOTANICAL NAME	COMMON NAME	NATIVE TREE	DROUGHT TOLERANT	OZONE REMOVER	EVERGREEN BUFFER
<i>Acer barbatum</i>	Southern Sugar Maple	x			
<i>Acer buergeranum</i>	Trident Maple		x		
<i>Acer leucoderme</i>	Chalk Maple	x	x		
<i>Acer palmatum</i>	Japanese Maple		x		
<i>Acer ginnala</i>	Amur Maple				
<i>Amelanchier arborea</i>	Serviceberry	x			
<i>Carpinus caroliniana</i>	American Hornbeam	x	x	x	
<i>Cedrus deodara</i>	Deodar Cedar				x
<i>Cercis canadensis</i>	Eastern Redbud	x			
<i>Cercis chinensis</i>	Chinese Redbud				
<i>Chamaecyparis thyoides</i>	Atlantic Whitecedar	x			
<i>Chionanthus virginicus</i>	White fringetree	x	x	x	
<i>Cladrastis kentukea</i>	American Yellowwood	x			
<i>Cornus alternifolia</i>	Pagoda Dogwood	x			
<i>Cornus florida</i>	Flowering Dogwood	x			
<i>Cornus kousa</i>	Kousa Dogwood		x		
<i>Cotinus obovatus</i>	American Smoketree	x	x	x	
<i>Cotinus coggygia</i>	Common Smoketree		x	x	
<i>Cryptomeria japonica</i>	Japanese Cryptomeria		x		x
<i>Cupressocyparis leylandii</i>	Leyland Cypress		x		x
<i>Halesia tetraptera</i>	Carolina Silverbell	x			
<i>Hamamelis virginiana</i>	Common Witchhazel	x			
<i>Ilex x attenuata</i>	'Foster'/'Savannah' Holly		x		x
<i>Ilex latifolia</i>	Lusterleaf Holly		x		x
<i>Ilex x 'Nellie R Stevens'</i>	'Nellie R Stevens' Holly				x
<i>Ilex opaca</i>	American Holly	x	x	x	x
<i>Ilex verticellata</i>	Winterberry	x			
<i>Ilex vomitoria</i>	Yaupon Holly	x	x		x
<i>Juniperus virginiana</i>	Eastern Redcedar	x	x		x
<i>Koelreuteria paniculata</i>	Goldenraintree		x		
<i>Lagerstroemia indica</i>	Common Crapehyrtle		x	x	
<i>Maclura pomifera</i>	Osage-orange		x		
<i>Magnolia grandiflora</i> 'Bracken's BrownBeauty'	Bracken's Brown Beauty' Magnolia	x			x
<i>Magnolia grandiflora</i> 'Little Gem'	Little Gem' Magnolia	x			x
<i>Magnolia x soulangiana</i>	Saucer Magnolia			x	
<i>Magnolia stellata</i>	Star Magnolia				
<i>Magnolia virginiana</i>	Sweetbay Magnolia	x			
<i>Malus floribunda</i>	Japanese Crabapple			x	
<i>Myrica cerifera</i>	Southern Waxmyrtle	x			x
<i>Ostrya virginiana</i>	Hophornbeam/Ironwood	x			

BOTANICAL NAME	COMMON NAME	NATIVE TREE	DROUGHT TOLERANT	OZONE REMOVER	EVERGREEN BUFFER
<i>Oxydendrum arboreum</i>	Sourwood	x	x	x	
<i>Parrotia persica</i>	Persian Parrotia		x		
<i>Pinus virginiana</i>	Virginia Pine	x	x		x
<i>Pistacia chinensis</i>	Chinese Pistache		x	x	
<i>Prunus caroliniana</i>	Carolina Cherrylaurel	x			x
<i>Prunus laurocerasus</i>	Common Cherrylaurel				x
<i>Prunus serrulata</i>	FloweringCherry			x	
<i>Prunus subhirtella</i>	Higan Cherry			x	
<i>Prunus x yedoensis</i>	Yoshino Cherry			x	
<i>Rhus species</i>	Sumac	x			
<i>Sassafras albidum</i>	Sassafras	x	x	x	
<i>Thuja plicata</i>	Western Arborvitae				x
<i>Vitex agnus-castus</i>	Chastetree		x		

APPENDIX D: EVERGREEN SHRUBS FOR OPAQUE BUFFERS

BOTANICAL NAME	COMMON NAME	NATIVE PLANT	DROUGHT TOLERANCE	OZONE REMOVER
<i>Buxus spp. (and cultivars)</i>	Boxwood			
<i>Cleyera japonica</i>	Japanese Cleyera			
<i>Ilex cornuta cultivars*</i>	Chinese Holly			
<i>Ilex crenata cultivars**</i>	Japanese Holly			
<i>Ilex glabra</i>	Inkberry	x		
<i>Ilex vomitoria 'Nana'</i>	Dwarf Yaupon Holly	x	x	
<i>Illicium floridanum</i>	Florida Anise	x		
<i>Kalmia latifolia</i>	Mountain Laurel	x		
<i>Loropetalum chinense</i>	Loropetalum			
<i>Ligustrum japonicum (cultivars)</i>	Wax Leaf Ligustrum		x	x
<i>Myrica cerifera (shrub form)</i>	Wax Myrtle	x		
<i>Nandina domestica (cultivars)</i>	Nandina			
<i>Prunus laurocerasus (shrub form)</i>	Cherry laurel, 'Otto Luyken'			
<i>Rhaphiolepis indica</i>	Indian Hawthorn			
<i>Rhododendron indica (cultivars)</i>	Southern Indian Azalea			

* Common Chinese Holly cultivars include: 'Bufordii', 'Carissa', 'Dwarf Burford', 'Needlepoint' and others.

**Common Japanese Holly cultivars include: 'Compacta', 'Convexa', 'Helleri', 'Hetzii'

APPENDIX E: TYPICAL BUFFER DETAILS



Figure #1 (10-20' Buffer)



Figure #2 (21-35' Buffer)

APPENDIX F: PARKING LOT TREE & LIGHTPOLE DETAILS

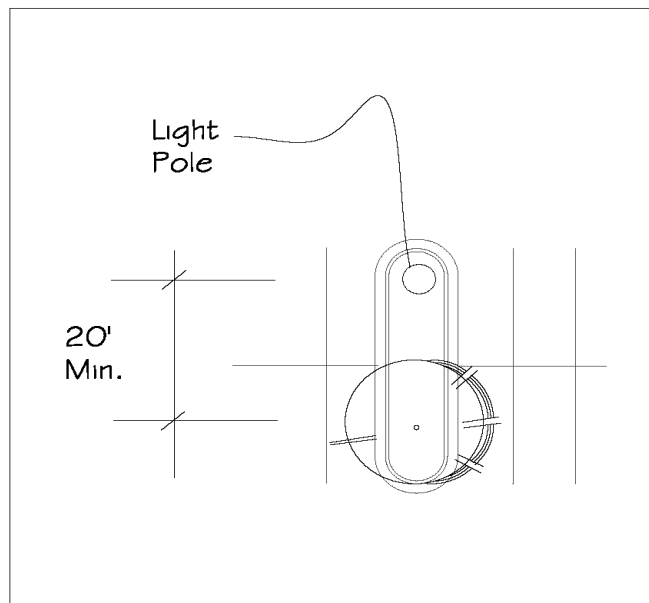


Figure #1

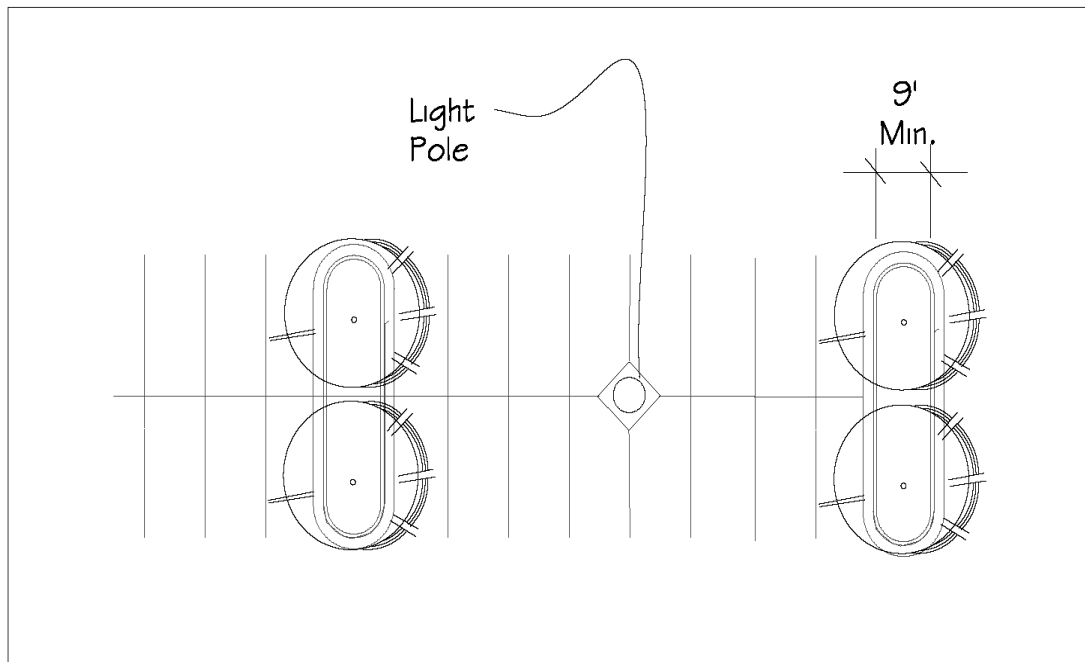


Figure #2

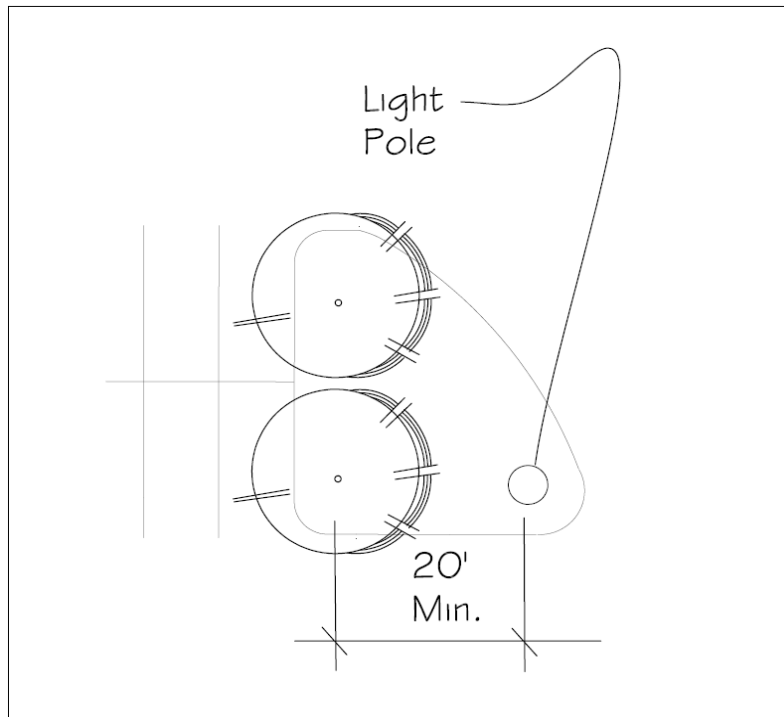


Figure #3

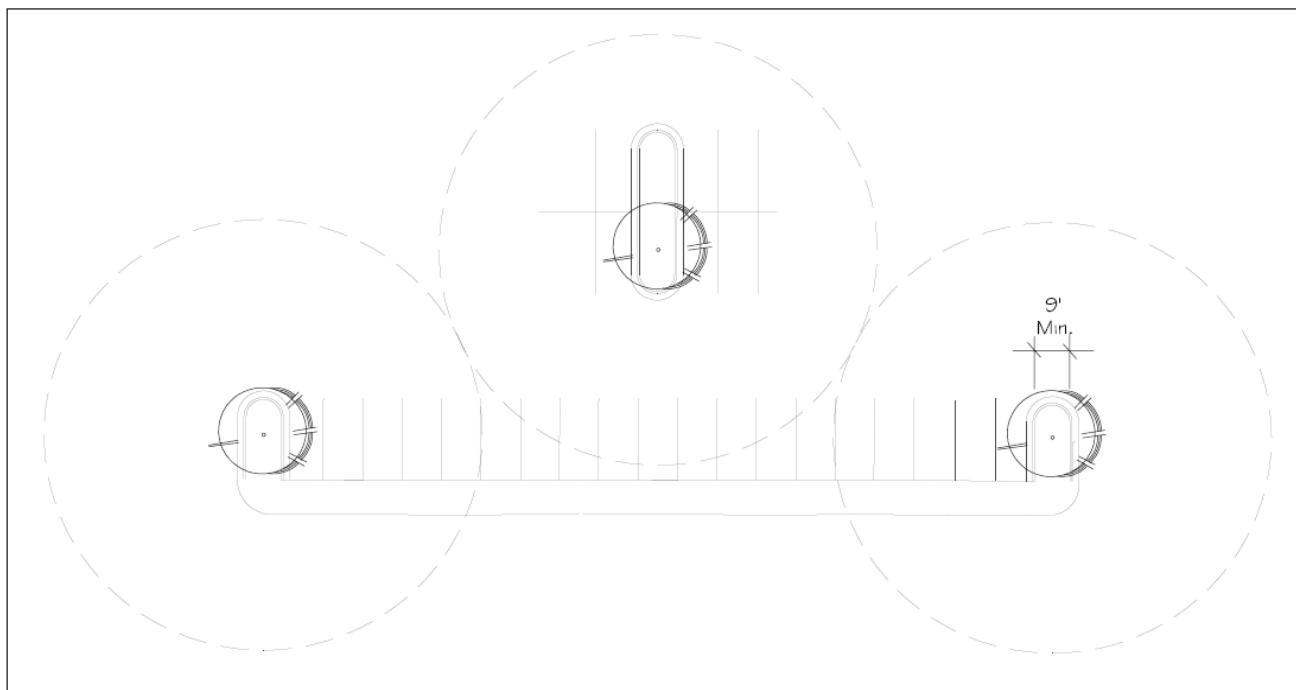


Figure #4